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Do-it-yourself (DIY) adaptation: Civic initiatives as drivers to address climate change at the urban scale

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ABSTRACT

Greening projects lead by civic actors at the urban scale spur transformation through example and through gradual adjustment of processes. Questions remain on how such projects are put into action and on what make them work. How do civic experiments reflect the ongoing change in urban governance and practices? We focus on a qualitative study of two greening initiatives lead by civic groups in Quebec City (Quebec, Canada). The case studies are analysed through the lens of theories that approach civic action and climate experiments as new modes of urban governance. We conclude that civil society groups have the capacity to intervene directly on the urban environment in order to enhance its quality. Findings reveal that informal greening initiatives contribute to a civic narrative in favour of adaptation to climate change at the local scale.

1. Introduction

Largely recognized as having a major role to play in fighting climate change, particularly in terms of adaptation (Aylett, 2015; Broto, 2017; Heinrichs, Krellenberg, & Fragkias, 2013), cities increasingly pursue concrete and strategic action (Chu, Anguelovski, & Roberts, 2017). But the fight against climate change is a shared challenge that cannot be addressed by local governments alone (Anguelovski, Chu, & Carmin, 2014). On the one hand, the planning and funding of climate change adaptation is the responsibility of higher levels of government and supranational groups (Nalau, Preston, & Maloney, 2015). On the other hand, third parties—private stakeholders or representatives of groups or civil society—are the ones mostly responsible for taking action and best able to do so (Aylett, 2013; Bulkeley & Broto, 2012).

Indeed, taking adaptive action and making it part of regular practice is usually something that non-governmental players initiate. There is a growing volume of literature on cases where companies (Broto & Bulkeley, 2013; Kivimaa, Hildén, Huitema, Jordan, & Newig, 2017), households, or citizens groups (Semenza, March, & Bontempo, 2006; Wamsler, 2016) have gotten involved in the fight against climate change. These actions encourage a form of climate governance that recognizes the role and capacity of nongovernmental stakeholders in decision making and service delivery (Anguelovski & Carmin, 2011; Linnenluecke, Verreynne, de Villiers Scheepers, & Venterd, 2017; Sarzynski, 2015; Satterthwaite, 2007). Civic action can have significant collective impacts (Seyfang & Haxeltine, 2012; Tompkins & Eakin, 2012; Wamsler & Brink, 2014).

This article focuses on civic action in the field of urban greening. It seeks to understand how local actors contribute to climate change adaptation at the neighbourhood level. Based on two greening initiatives, the study seeks to enrich our thinking on how citizens can support climate change adaptation. It looks at local experiments as examples of how to develop and implement adaptation.

The two case studies involve special interest groups: *Bien Vivre à Saint-Roch* (or 'Living Well in St.Roch'), and *Verdir et Divertir* (or 'Greening and Animating'). Their ongoing initiatives were all launched between 2009 and 2012 with the aim of improving the quality of the urban built environment. They are modest initiatives with modest results, but they got residents working together and had an impact on neighbourhood landscapes. In that sense, they serve as examples of what can be accomplished at the local level with limited means and relatively simple actions. These citizen initiatives helped structure a civic "narrative" of support for the greening of downtown neighbourhoods.

From a theoretical perspective, examining local greening projects enriches our understanding of climate experiments as a framework for analysing current climate governance (Moss, Meehl, Lemos, et al., 2013; Swart, Biesbroek, & Lourenço, 2014). We postulate that through their ad hoc initiatives, experimenters take a collaborative rather than a confrontational approach to public action. They put an array of resources to work that diverge from the repertoire of performances traditionally associated with social movements, such as associations, street

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marches and public statements (Tilly, 2004). Through their self-producing and action-oriented strategy, civil society stakeholders create a momentum that drives the city's adaptation to climate change. Our case studies illustrate how local actors take visible action in the daily urban space and how these actions can be seen as local and civic tools to adapt the city to climate change.

Section 2 addresses the concept of experimentation and Do-It-Yourself (DIY) urban planning as ways in which civil society can get involved in developing public urban spaces. We then provide a brief overview of the social and climatic context in Quebec City, the impact of greening initiatives on climate change adaptation and the methodology used (Section 3). Section 4 presents the cases studies. Section 5 discusses our main findings on the impact of civil society stakeholders on the city's adaptation to climate change.

2. Theoretical framework: Different ways to have a direct impact on the urban landscape

Already in 2007, the Working Group II of the Intergovernmental Panel on Climate Change (IPCC) recognized the role of public participation in reinforcing the relevance and feasibility of adaptation measures (IPCC, 2007). Subsequent research has supported the idea that including local residents in planning and implementing adaptation is not only helpful but also necessary for good governance of the urban adaptation process (Linnenluecke et al., 2017; Measham et al., 2011; Tanner, Mitchell, Polack, & Guenther, 2009; Webb, McKellar, & Kay, 2013).

More generally, governance has been shifting from the institutional model since the beginning of the 21st century: the urban political landscape is changing and is tending away from the conventional institutional framework (DePledge, 2006; Moss, 2009). New groups of people are using new methods of collaboration, structured by individual preferences and lifestyle rather than collective goals and interests (Bennett, 2012). Through the choices they make, individuals question public action and even agree to take its role in order to adjust and adapt this public space (Hay, 2007). In that sense, such modus operandi diverge from traditional social movements and from regular collective action.

We will take a look at these new interactions considering them first as a way to experiment with forms of climate governance (Broto & Bulkeley, 2013; Hoffmann, 2011) then as a way for individuals and groups from civil society to have a direct impact on their communities (Finn, 2014; Spataro, 2016).

2.1. Local greening experiments as a first step towards adaptation

The concept of experimentation is increasingly present in research on sociotechnical transition, sustainable socioenvironmental management, and climate governance (Betsill & Bulkeley, 2007; Evans, 2011; Geels, 2004, 2005). Some studies specifically focus on technical experimentation, which provides new products or services to support more sustainable practices (Berkhout et al., 2010; Kivimaa et al., 2017). These technical innovations—new roofing materials, for example—contribute to the shift to a form of sustainable development in line with conventional management and production systems (Broto & Bulkeley, 2013). However, they do not necessarily involve a change in standards or in the way we approach problems and their solutions (Farrelly & Brown, 2011).

In contrast, governance experiments are seen as having the potential for bringing about a more indepth transformation of our ways of addressing socioenvironmental issues (Bos & Brown, 2012; Chu, 2016). They bring together stakeholders from different backgrounds—private sector, public sector, civil society, and associations—and mobilize their resources (Moore & Hartley, 2010). Experimentation can be aimed at a material result, but it can also seek a cultural change to reduce greenhouse gas emissions and the climatic vulnerability of cities, for example.

Governance experiments do not result from national or international programs (Hoffmann, 2011). They are in fact ad hoc projects whose originators are not necessarily involved in climate risk management. These actors might be local elected officials, and community groups leaders are likely to be on the front line of catastrophic events. However, these are scarcely involved in the making of public policies and planning processes regarding climate change.

This situation is changing, with social acceptance, deliberative democracy and public participation now being recognized as legitimate part of the decision-making process (Healey, 2006). Moreover, local actors are reclaiming their voice and even directly taking action to adjust and adapt the local space and environment. By doing so, when organizing sandbagging of the streets to staunch an anticipated flood for example, they do not follow normal rules and institutional frames. While regular collective action produces stakeholders with a common goal and shared values who express their will and claims to the institutional authority, governance experiments build a new authority (Hoffmann, 2011). Since there is no best practice to refer to when it comes to complex problems, experimenters need to define new arrangements, inspired by frames and references from different scales, sectors of activity and knowledge (Anguelovski & Carmin, 2011; Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013). Experiments offer the opportunity to explore and apply innovative practices (Karvonen & van Heur, 2014; Rosenzweig & Solecki, 2013).

Actors who experiment are motivated by the expectation of learning by doing. In that sense, they manage to take action without knowing with certainty if their initiative will be efficient or if it will be accepted and recognized by the bulk of the population (Camacho & Rodriguez, 2008; Bos & Brown, 2012; Moore & Hartley, 2010; Loorbach, 2010). Furthermore, with regard to adaptive action, those who engage in experimentation serve to drive adaptation to climate change, ahead of public action, although it is not necessarily their primary aim: Adaptation is sometimes a positive by-product of their actions.

Therefore, governance experiments promote adaptation to climate change because they spur transformation through example and through incremental adjustment of processes. However, some questions remain on how the experiments are carried out, how they are put into action and if they can gain legitimacy (de Bruijne, van de Riet, de Haan, & Koppenjan, 2010; Linnenluecke et al., 2017). The literature on Do-It-Yourself (DIY) urban planning is another, valuable resource for looking at experimentation at the local urban level.

2.2. Experiments as DIY urban planning: Individuals and small groups taking action on the public space

In all cities around the world, daily life is the stage on which new practices and habits emerge (Andres, 2013; Spencer, 2012). The neighbourhood is a place for challenging the dominant cultural authority, especially what the state authority has neglected to do (Finn, 2014). Behind citizen urban planning[1] is the desire to take action and spontaneously adapt the urban context (Sargin & Savas, 2012). Local DIY urban planners in developed cities target urban environments they deem to be neglected. In doing so, they initiate a learning and adjustment process, both for the urban space in question and themselves (MacFarlane, 2011; Mitchell, 2003; Sassen, 2012).

In this regard, DIY planning activities, which vary in time and space (Wasserman, 2007), are based on the idea that citizen stakeholders can create urban spaces or change and improve them. This “right to the city” (Lefebvre, 1968) exercised by users of the space lead stakeholders and observers to question for whom and for what the city is designed (Iveson, 2013).

[1] DIY is often associated, rightly or wrongly, with tactical urban planning (Spataro, 2016).

In many informal citizen initiatives, nature is used as a tool to promote socialization and association (Certomà, 2011). *Guerrilla gardening* can even politicize (or repoliticize) current environmental thinking (Adams, Hardman, & Scott, 2013; Certomà & Tornaghi, 2015). Ad hoc or marginal public spaces also encourage communication and connection (Radywyl & Biggs, 2013). Places of mobility and transit promote interaction between different cultures and lifestyles. The automobile culture is especially criticized by those who support pedestrianization and bicycle use (Aldred, 2010).

At a deeper level, spaces that were underappreciated—even scorned—fall under an alternative cultural and organizational authority (Mitchell, 2003). There results an upending of the conventional mode of action of social groups and associations: Political tools such as demands, discourse, and debate cease to be the stock-in-trade of contemporary tacticians (Hou, 2010; Spataro, 2016).

By acting on the urban environment outside institutional structures, people we could call citizen experimenters demonstrate that other forms of action can be used. They show that it is possible to forge alliances, of varying configurations and durations, between stakeholders from different sectors, including representatives of the municipal government. In fact, these citizen experiments help shed light on how local governments can revisit their role and better harmonize their actions with initiatives by civil society stakeholders. The citizen greening projects that we studied revealed that municipal governments are interested in supporting ad hoc, adaptive initiatives, especially if the community sees them in a positive light. Before presenting these experiments, we will describe the context in which they took form.

3. Context and methodology

Climate models predict summers in Quebec City will be hotter during the day and at night, and summer events where temperatures are very high during the day without dropping at night will be more frequent and intense (Ouranos, 2015). The impacts of these climate changes will particularly affect people at risk, i.e., the vulnerable, the elderly, children, and low income individuals (Briggs, Abellan, & Fecht, 2008; Padilla et al., 2014). Vulnerability also varies depending on where people live and their built environment (Crouse, Ross, & Goldberg, 2009). Neighbourhoods that have very little greenspace and canopy cover, like those in the centre of Quebec City, are more uncomfortable to live in and their at-risk residents are more vulnerable. The impact of urban heat islands is greater in areas with insufficient greening and can affect mortality rates (Smargiassi et al., 2009).

We use the definition of urban greening developed by Sorensen (1997:1): a process of improving the environmental quality of the urban environment as well as its aesthetic qualities and economic value. Planting shrubs and trees, setting aside areas for gardening, and creating green roofs and walls are all examples of urban greening (Sorensen, 1997). These are things designed to enhance the environmental quality of the urban environment or reincorporate natural elements into the city, and are usually conducted at the neighbourhood level by civic actors.

A number of urban greening initiatives have been carried out by disadvantaged groups and “conventional” citizen groups (Anguelovski, 2015; Emelianoff, 2008). However it is becoming increasingly clear that local greening experiments such as those we studied are conducted as much by more advantaged, educated groups of citizens who are usually not from minority groups or in financial or other types of difficulty (Certomà & Tornaghi, 2015). As these initiatives are experiments, they also involve different types of arrangements among the various actors, both in terms of decision making and action on the ground. What do these arrangements involve? How do they spur adjustments to climate change governance at the local level?

We analysed greening projects launched and carried out by citizens as experiments aimed at initiating a process, which resemble the climate change adaptation process, in Quebec City (Quebec, Canada). We aimed at shedding light on how citizens promote the transformation of local governance, especially with regard to climate change.

Two civic initiatives were studied in depth and are the focus of the analysis presented here: The citizen group Bien vivre à Saint-Roch (BVSR), the citizen group set up as a non-profit Verdir et Divertir (V&D). V&D and BVSR participants are almost equally composed of men and women. Collective actions of BVSR mostly involve young professionals (25–35 years old) and pre-retirees (55–65 years old), whereas V&D engages young adults and families.

The two cases are in line with the definition of local governance experiment we determined based on the literature. That is, their activities correspond to a set of processes implemented at the local level, combining the experience, resources, knowledge, and projects of a number of actors (public, private, and from civil society) in order to adapt the living environment and demonstrate the value of the actions undertaken (Bulkeley, Broto, & Edwards, 2015; Hoffmann, 2011). These projects are non-state and ad hoc action-oriented projects; they aim at initiating change through demonstration; and they are lead by individuals who believe their small contribution can make a difference. Finally, the cases selected for this study are also similar in that they address climate change indirectly. In each case, enhancing the quality of the environment and the aesthetic and economic value of the area is the aim, rather than adapting the neighbourhood to climate change. Still, these micro-local initiatives represent practices that can lead the way to normalizing the greening of the urban public space.

The cases were documented via a literature review, observations (made from 2015 to 2016), and 18 semi-structured interviews with experimenters. The interviews involved, on the one hand, experimenters and, on the other hand, residents of the neighbourhoods where the initiatives took place, and representatives of the municipal government.

The questions posed during the interviews concerned the various resources used (competencies, funding, networks), the motivations and reasons behind the actions, any barriers encountered in conducting the experiments, and the impacts of the actions on the physical and social environments. During the interviews we also asked questions about the dynamics among stakeholders, their alliances, and where, when, how, with whom, and over what time period the greening initiatives were carried out.

The cases were analysed, summarized, and compared in order to identify their contexts and the similarities and dissimilarities among experiments. The data collected during the interviews was analysed using a content processing tool.

4. DIY greening of the urban landscape: Towards new modes of collaboration and participation

In this section, we analyse the two cases to see how local experiments draw attention to the fact that urban problems are being redefined. The civic leaders who experiment (typically already) influence the “what” and “how” of climate change adaptation in the city. In doing so, they also put into perspective the fact that new forms of agency and activism emerge in developed cities regarding urban development and planning.

4.1. “Verdir et Divertir” and “Bien vivre à St-Roch”, two action-oriented citizen initiatives

Renovating a street represents a very concrete action that affects people's living environment. For the non-profit organization Verdir et divertir (V&D) and the citizens group Bien vivre à Saint-Roch (BVSR), the city's plans to renovate a neighbourhood street was the trigger that pushed residents to get together, organize, and experiment with urban greening.

In 2009 for V&D and in 2012 in the case of BVSR, a notice from the city announcing plans to renovate a street got neighbours discussing the

possibility of transforming sidewalks, planting trees, and changing the direction of traffic. When they heard that the City of Quebec planned to completely redo the street without changing anything, both BVSR and V &D decided to act and get the neighbours involved in planning an alternative. Both citizen groups considered that by opting for a standard do-over, the City of Quebec was missing out on an opportunity to modernize its urban planning process.

In response, V&D and BVSR came up with proposals for shared streets, with a number of parking spots. The alternatives proposed to the City of Quebec also provided for planters, arranged in such a way as to force cars to slow down.

Resident leaders of both groups were motivated by the feeling that they could initiate or contribute to change. They drew on their double expertise—as residents and professionals—to legitimize their actions. They organized and put their personal and professional resources to work in order to act in and on their daily-life scene.

> "I think we share a common interest in the quality of the living environment. We do not articulate our thinking and actions exactly the same way, but globally, greening reaches everyone. We all have the feeling that there is a need to adapt the municipal regulation in order to reinforce greening interventions." (E12-2015- V&D leader)

Both BVSR and V&D define themselves as citizen groups dedicated to enhancing the quality of their living environment. They present greening as a positive activity that promotes socialization and a feeling of belonging. This shared project uses the sense of place and intimate knowledge of the neighbourhood as a referent.

4.2. Legitimacy served by technical and political know-how

V&D has notable organizational strengths. Online photos and videos provide a visual record of its greening work. The steps required to carry out projects are clearly explained to volunteers and situated as part of a broader, well-justified context. The organization's Facebook page, which counts about 800 followers, serves as a platform for publicizing information sessions and work bees. Members of the non-profit organization have to either live or work in a small vicinity of the Saint-Roch neighbourhood called 'Tanners' piece of land.

The experimenters at V&D present themselves as urban action experts and tactical urbanists. They use technical language to discuss the canopy cover needed to ensure comfortable temperatures, good air quality, and the wellbeing of residents.

These experimenters are familiar with municipal urban planning procedures. They are able to suggest alternatives that are tailored to the community and can be integrated into regular management operations. They also know the right person to contact within the city administration to get information and to communicate these alternatives.

> "If we hear about a street being repaired around here, we send an email about it to the borough director or the urban planning advisor and ask about their way of doing things, something like: 'have you planned on greening the street?'" (E08-2015- V&D leader)

This ability to contact the right person in order to activate a project also characterizes BVSR leaders. In this case, members came up with ideas for a number of targeted actions designed to be carried out in partnership with owners, residents, merchants, and organizations. These included planting flowers and greening, beautifying, and creating a visual identity for the northern section of the Saint-Roch neighbourhood. BVSR submitted a map to the city showing the best spots to intervene.

Demonstration is a key goal of both groups. Making their action visible is the strategy behind tactical urbanism. By doing-it-themselves, V&D and BVSR integrate vegetation to the daily life of their neighbours and they demonstrate to the local administration that the street landscape can be reshaped.

> "I think these initiatives happen without the city administration really realising and this is precisely what is good about them. If they had asked authorization to plant, it would have been complicated and maybe it would not have happened" (E16-2015-observer).

These demonstrations seem to have convinced the local administration to rely on experimenting before planning at large, as a civil servant confirms: "it is through such micro-projects that we will demonstrate our ability to do things, without having to commit to elaborate large plans" (E09–2016-civil servant).

The citizen actions we studied differ in the approaches they take and the type of support they seek: economic development and entrepreneurs in the case of BVSR, urban forestry and urban technicians and tacticians in the case of V&D.

BVSR's efforts are at the interface between public and private action. Partnership is crucially important to the group. Leaders see themselves as volunteers who aim to complement the institutional work. They put a distance between themselves and grassroots movements aiming to exert political pressure on the city.

> "So we always pay attention to working with the rules. You know, we don't do "urban guerrilla". (…) Permits were requested and most of the time, it was along abandoned parking fences, unclean spaces. By doing this, we create a harmonized urban fabric." (E07-2015-BVSR leader)

BVSR uses an entrepreneurial approach. Since its formal founding in 2013, BVSR has developed rare partnership modes that include business people and shopkeepers. The leaders choose to present their greening project as an opportunity to forge ties among neighbourhood residents. By approaching businesses with vacant lots or parking spaces that are strategically located on street corners (see Fig. 2), BVSR was able to take concrete action (plantings of trees, shrubs, and vegetables) to increase the proportion of natural elements in the neighbourhood.

At the same time, the group garnered these businesses' support in the form of sponsorships, which helped fund the plantings. This collaborative relationship with shopkeepers and entrepreneurs helped BVSR woo City of Quebec decision makers, who are particularly sensitive to the concerns of the business people in the area.

BVSR and V&D position themselves differently in terms of participation and interaction with other groups and citizens.

> "They have a Facebook page and they take position on public debates regarding planning. (…) We don't do that. We are interested in greening." (E07-2015-BVSR leader)

> "I am critical of this approach, the fact that they just say: 'let's plant shrubs and plants to improve the image of the neighbourhood'. There is no questioning of the impact of such embellishment, no discussion about for whom and for what we do it" (E20-2015-observer).

Although they do so in different ways, the leaders of BVSR and V&D use their know-how to mobilize their neighbours and establish their legitimacy as stakeholders who can propose alternatives to the municipal government.

4.3. A collaborative approach leading to incremental change

The two small and isolated projects, which constitute our case studies, have driven only small changes in the environment. But they have also structured the narrative on the need to reorganize public space in high-density neighbourhoods. They have thus legitimated the civic demand for greener spaces. This civic narrative was heard at city hall, which responded by setting up an urban greening program in Quebec City and reviewing roadwork practices. The initiatives thus benefited from a receptive municipal government and demonstrated the feasibility and relevance of alternative approaches to designing our cities. In

Table 1
A summary of the case studies.

Experiment	Profile (resources and motivation)	Problem addressed	Modes of action	Relation to climate change adaptation	Impacts on social and urban landscape	Impacts on climate governance
Verdir et Divertir (V&D)	Civic group incorporated into non-profit organization	• Heat Island effect • Air pollution • Urban decline	Build and install sidewalk gardens, relying on their professional skills and competencies	Indirectly addressed through discussions on quality of living environment	Demonstration of alternative street landscape Activation of a local mobilisation	Legitimation of social demand for greener streets in high-density urban environments
Bien Vivre à Saint-Roch (BVSR)	Civic group	• Urban decline • Lack of green spaces	Build, improve and install sidewalk gardens, relying on examples seen elsewhere	Indirectly addressed through discussions on quality of living environment	Improvement of communication between residents and local business people	Recognition of civic group as a stakeholder in local development committees

Fig. 1. Plants, vegetables and a reused painted bike installed by BVSR on a street corner (photo taken by author).

that sense, by their collaborative approach, these greening DIY initiatives can be seen as a first step in transforming the governance of climate change at the local level.

The impact of the planters and gardening plots introduced by the citizen experimenters from V&D and BVSR, as summarized in Table 1 and shown on Fig. 1, is undoubtedly limited. The objective of adapting urban spaces to climate change has not yet been attained.

Nevertheless, BVSR and V&D had other kinds of impacts on the local stage. In the two greening experiments, civic actors strive to develop a collaborative rather than confrontational relationship with the

Fig. 2. Verdir and Divertir leaders getting prepared for a task in 2017 (source: Verdir et Divertir).

municipal government, even when they seek to make up for the failure of local institutions to act or to act quickly with respect to urban greening.

In this regard, rather than climate change, the issues at stake for them are the obsolete urban planning structure on the one hand, and a lack of green spaces in the urban fabric on the other.

> "It is not only about plantations put by Bien Vivre à Saint-Roch, it is also about pressuring to change the way things are done, to allow for greening along streets and buildings and to make the City take leadership for it" (E04-2015-observer).

Both initiatives are a necessary and important step in changing the usual ways of running the city. BVSR and V&D realised it was complicated for the municipal government to change its street renovation practices in order to incorporate plants and to slow car traffic. Local residents saw that institutional representatives were having a hard time switching to a sustainable approach, even at the very small scale of a neighbourhood street. They were motivated by that context and decided to experiment with the greening of the public space. Rather than running the risk of getting tied up in red tape, they preferred to act fast and without city approval.

> "We came to the city officials with a positive attitude. We expressed our will to see projects and plans aimed at developing sustainable mobility and greening. And it was concordant with what other citizens had said, even people we did not know. So we confirmed those were common local preoccupations. So we said to the councillor: 'Look, let's sit down and talk about this project'." (E08-2015-V&D leader)

These experiments challenge the system in place, but they do so gradually and without confrontation.

> "Elected officials will rule according to citizens' demands. If the idea arose out of community's determination, it has more power of influence than if it comes from us, civil servants. If I just say 'let's do this because it is the right thing to do', it is not going to wash". (E09-2016-civil servant)

Like most experiments, which are associated with a culture of transition (Bulkeley et al., 2015; Loorbach & Rotmans, 2010), our cases do not reflect a wish to break with the system, but rather the desire for incremental reform. The experimenters see their actions in the urban environment as complementary to public action.

> "They sort of put greening back on the agenda and they showed citizens of the neighbourhood that 'hey, there's a park here and there's a way to do something'. (…) the bikes, when they started, it was really, everyone was like 'wow! Who does that?' It was an interesting civic action". (E20-2015-observer)

In that sense, the cases show that citizen experiments can spur change and pave the way for community adaptation. Civic experiments prepare the transformation of potentiality into action.

5. Discussion: Local experimentation and climate change adaptation

The urban greening experiments conducted by members of civil society and discussed here lead to two main findings. First, they show that civic stakeholders want to engage in the transformation of the urban environment. They feel qualified and legitimate to intervene directly on the public space in order to enhance its quality. The second observation is that these citizen experiments reflect the ongoing change in the civic participation to urban governance. Civic actors are choosing a collaborative rather than a confrontational approach, which serves to build bridges between citizens and the city. The informal and punctual projects fall outside from the regulatory framework, which helps to make incremental adjustments. The cases of Bien Vivre à Saint-Roch, and Verdir et Divertir demonstrate how small-scale citizen experiments can bring about climate change adaptation in a concrete way.

While uncoordinated, these experiments share some features. The experimenters we studied are individuals who choose to live in central neighbourhoods so they can enjoy the amenities they offer, namely local services and shops, lower rents, cultural offerings, and diverse lifestyles. They are committed to this living environment and can see how it has been left out of public planning priorities for too long (Anguelovski, 2015). The dilapidated facilities and neglect of central areas by public authorities are a motivation to act. Concordant with the literature on civic action (Wittmayer, Schäpke, van Steenbergen, & Omann, 2014), our case studies reveal a desire for immediate, concrete action, perceived as the solution to specific problems.

In this regard, the experiments we studied are similar in that they challenge traditional ways of taking action. These observations agree with the DIY urban planning literature with respect to the reasons for taking action (Finn, 2014; Hou, 2010; Spataro, 2016).

In Quebec City, as elsewhere, the issue of the quality of local and micro-local urban environments leads actors who are not associated with the usual program frameworks to take a leadership role (Dobernig & Stagl, 2015; Haenfler, Johnson, & Jones, 2012; Hay, 2007). "If civil servants wanted to do the same, they would have to really get close to the 'lived world' of the neighbourhood. That is hard to get for the city administration and this is precisely what groups like BVSR or V&D can bring." (E16–2015-observer).

The demand for enhancing quality of life by adding natural elements—for permeable, cultivatable surfaces in the heart of urban environments—is not really new. Citizen urban greening initiatives date back more than a century (Talen, 2015). What's new is who is pushing for the greening of these central urban neighbourhoods and how they interact with the municipal government.

In the cases we studied, like in other documented cases (Anguelovski, 2015; Bos & Brown, 2012; Moore & Hartley, 2010), citizen actors were motivated to supplement public action or even take the place of it. The experimenters considered that the best way to gain knowledge and resolve the perceived problem was through learning by doing (Loorbach, 2010). This approach is in line with the objective of adapting the community to climate change. However, the targeted problem was not explicitly climate change, which the respondents did not seem to see as a threat.

Also, the modes of action observed in local greening experiments reveal a personal appropriation of the political process (Bennett & Segerberg, 2011). Such appropriation is facilitated by social media and the possibility of forging ties with many people with widely diverse backgrounds around a variety of issues. Thanks to technology, it is easy for individuals to interact within a system of collective action, which is completely separate from the system governed by institutional mechanisms (permit applications, hearings, etc.).

Local experiments are indicators of how urban issues are being redefined. Because experimenters have professional skills and experience and are able to obtain various forms of recognition and support (exposure on social networks, financial support, etc.), they have considerable social legitimacy. Experimental action can demonstrate solutions to redefined urban issues as well as acceptability of such solutions. And this has an influence on public action. In Quebec City, the municipal government has reacted positively to local experiments. It has even supported them to varying degrees and has been inspired by them.

6. Concluding remarks

Greening projects in central urban neighbourhoods illustrate how a certain aspect of citizen activism has evolved. Although it can be said that citizen initiatives emerge in response to the threat of a neighbourhood disturbance or to gentrification (Anguelovski, 2015; Crisp, 2013), many contemporary activists see the physical living

environment more as a site for occasional action and collaborative expression that can contribute to urban planning (Haenfler et al., 2012; Silva, 2016). Local experiments by representatives of civil society in cities in the developed world attest to the growing power of informal collective modes of action, conducted in a physical space but coordinated in the virtual social media space (Dobernig & Stagl, 2015).

Therefore, DIY greening experiments differ from traditional forms of civic action. They originate from individual rather than collective goals and primarily seek fast action and collaboration while traditional civic action is keener on confronting and going against the municipality. Experimenters are expert citizens and neighbours that wish to participate in a change at the local level. These findings give interesting answers to questions asked by other scholars on the agents initiating experiments and the scope of their innovation (Hildén, Jordan, & Huitema, 2017).

However, the growing number of channels for individual civic action is more challenging for individuals. It can also have an impact on participative democracy. The broad range of projects poses a certain risk of reducing the scope of the action taken. It also tends to multiply and fragment values and interests (Bennett, 2012). Since civic actors occupy multiple arenas in concrete daily life, they challenge conventional processes for mobilizing and consulting the public and taking action. They also have the potential for creating a false sense of security about problems that are in fact structural. As a followup, it would be instructive to see whether citizen experiments have staying power (Bulkeley et al., 2015). It would also be worthwhile to determine whether greening and urban agriculture initiatives become integrated into participative processes for urban projects and institutional programs in all neighbourhoods.

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